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AUTHOR	Lockheed, Marlaine E.; Harris, Abigail M.
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ABSTRACT

Standard least squares regression techniques are used to estimate the effects of non-sex-role stereotypes, equal-status cross-sex interaction and female leadership on changes in children's sex stereotyped attitudes. Included are a pretest, experimental treatment, and post-test. Teachers of approximately 400 fourth and fifth grade children received a six-session inservice training workshop as an experimental intervention; teachers of approximately 400 children served as controls. Results indicate that children whose school experience includes having a man as a teacher, having a woman as a unit leader, having a woman as a principal, knowing women who supervise men and knowing women doctors are more likely to hold more egalitarian beliefs about sex differences, intelligence, job discrimination, working women, and domestic roles and to have positive attitudes about cross-sex friendship and work choices. Similarly, children whose teachers do not group by sex, whose teachers assign them school work in mixed-sex groups, who play sports and engage in clubs in sex-integrated groups, and whose parents are supportive of cross-sex friendships are more likely to have cross-sex friendship choices, cross-sex work partner choices, and to approve of cross-sex interaction in general, as well as to hold less stereotyped attitudes regarding men's and women's roles in work and society. (Author)

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by

Marlaine E. Lockheed
Educational Testing Service

and

Abigail M. Harris
Educational Testing Service and
University of California, Berkeley

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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The Effects of Equal Status Cross-Sex Contact on Students' Sex Stereotyped Attitudes and Behavior

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Marlaine E. Lockheed

and

Abigail M. Harris

In the past few years, increasing attention has been drawn to the identification of appropriate strategies for reducing sex-role stereotypes in schools. Such attention is a move away from previous concerns with documenting the existance of such stereotypes.

From social psychology it is possible to identify three major lines of thinking with regard to stereotype reduction: 1) a cognitive social learning approach, which concentrates on providing non-sex-stereotyped models for children to emulate, 2) a cognitive dissonance approach, which concentrates on providing children equal status contact with persons about whom stereotypes are held, and 3) an organizational structural approach, which concentrates on equalizing differences in legitimate power between negatively and positively stereotyped groups. While the first line of thinking stresses sex differences that emerge as a function of role modeling--and omits any recognition of the differences in social value accorded to male and female roles--the second and third lines of thinking concentrate squarely on the value issue.

That sex-role stereotyping, lack of equal-status contact (i.e., sex segregation) and imbalance in influence between males and females occurs in schools is well documented (Pottker and Fishel, 1976; Lockheed and Hall, 1976),

In a landmark study published in the Harvard Educational Review, Lee and Gropper (1974) discuss how educational practices reinforce sex-role stereotypes from preschool onward. These practices are reviewed more recently by Lockheed and Ekstrom (1977). In particular, teachers reinforce girls for quiet, passively attentive behaviors,

(Lee, 1976; Lee and Kedar-Voivodas, 1976) while interacting more often with the more independent, active and assertive boys (Good, Sikes and Brophy, 1973). School curriculum materials, including books and tests, also reinforce sex-role stereotypes (Women on Words and Images, 1972; Tittle, McCarthy and Steckler, 1974; Donlon, Ekstrom and Lockheed, 1977).

Sex segregation refers both to practices, now illegal under Title IX, such as separate shop and homemaking courses for boys and girls, as well as to students' preferences for same-sex grouping. Such student preferences for sex-segregation has been observed in preschool (Fagot, 1977), as well as in elementary school. In the present study, for example, fewer than half of either the girls or the boys, in the fall, reported that they had worked on school work with a cross-sex partner. Teachers do not typically counteract this preference on the children's part, believing it to be a stage they will outgrow. Yet, segregation in any form is a potential source of stereotypes regarding the stereotyped groups (Katz and Benjamin, 1960). Furthermore, it is clear from the students' responses that there is an unequal desire for such separatism: a third of the girls but less than one-fourth of the boys would choose to work in a mixed-sex group.

Finally, an important organizational determinant of sex-role stereotypes is the absence of female leadership in schools, both in terms of the school organization and of curriculum content. While elementary teachers are predominantly females, principals are increasingly male, a situation which provides sex-inequitable models of leaders within the school organization itself. Nationally 83% of elementary school principals, 97% of secondary school principals and 99% of district superintendants are male (Pottker and Fischel, 1976). In addition, famous women are conspicuously absent from school curricula (Women on Words and Images, 1972). Students are conscious of this absence. For example, in the present study while approximately 80% of the children could name at least one famous man they had studied during 1976-77, fewer

than 35% of them could name a famous woman they had studied.

The absence of female leaders is also observed in behavioral studies of mixed-sex groups of students. Not only have we found that mixed-sex groups are influenced more by the male group members, we have also found even when the girls behave as the leaders, they are not perceived as such (Lockheed and Harris, 1977). In the present study we found that while the proportion of boys viewing themselves as a "very good leader" was slightly greater at the end of fifth grade compared to the beginning of fourth grade (from 32% to 35%) the proportion of girls so viewing themself was nearly cut in half over the same period of time (from 27% to 17%).

In the present paper, we examine the effects on children's attitudes of experiencing, 1) non-sex stereotyped role models, 2) equal-status cross-sex interaction and 3) female leadership. The attitudes we examine are directly related to each of these aspects of stereotyping.

METHOD

The data reported in this paper were collected as part of an ongoing evaluation of a teacher training project, entitled Promoting Equal Status Behavior Between Boys and Girls in the Classroom, funded for two years by the Women's Educational Equity Act Program of the U.S. Office of Education. The present paper covers the first year of the project, 1976-77, during which teachers were recruited and trained pursuant to a subsequent materials development workshop.

Two large surburban schools agreed to participate in the project. Each of the schools was divided into "units" which were reasonably independent minischools. Students in the separate units did not interact as part of their daily school schedule. Teachers were recruited to participate in a materials development and evaluation project; they were paid for their after-school participation. One unit in each school was designated as an "experimental" unit and one as a "control" unit. Only teachers from the "experimental" units were selected to participate. Not all teachers in the experimental units were participants.

The experimental intervention consisted of six two-hour workshops during which general principles were outlined, consciousness raising films were shown, consciousness raising activities were conducted, and preliminary techniques were written for trying out with children. There was no effort to evaluate the extent to which the techniques suggested in the workshops were implemented in the teachers' classes although such an evaluation was planned for the second year of the project.

The purpose of the data collection effort of the first year of this project was threefold:

1. To gather baseline data regarding children's behavior and attitudes in the fourth and fifth grades;

2. To test the hypothesized relationships between experience of non-sex role stereotypes, equal status cross-sex interaction and female leadership and subsequent attitude change;

3. and, incidentally, to examine the effects of teacher consciousness raising on children's attitudes and behavior change.

At the beginning of the school year and again at the end of the year we administered a survey to 1,000 fourth and fifth grade children attending the project school. The students surveyed were the entire fourth and fifth grade population of a central New Jersey school district. Items on the survey asked about the childrens' experience with non-sex-stereotyping, cross-sex interaction and female leadership, as well as about their attitudes toward sex role stereotypes, cross-sex interaction and leadership. Six indexes were constructed:

(1) children's experience with non-sex stereotyping (INDNS)

(2) children's experience with cross-sex interaction (INDCSI)

(3) children's experience with female leadership (INDFL)

(4) children's attitudes toward sex-role stereotyping (DEPNS)

(5) children's attitudes about cross-sex interaction (DEPCSI)

(6) children's attitudes about leadership (DEPFL)

The items comprising each of these indexes may be found in the Appendix. A higher value on each index indicates the stereotyped end of the scale. The intercorrelations between these scales are presented in Appendix Table A. It is clear that, in the fall, the only strong relationships were found between the experience of non-sex stereotyping and the experience of female leadership. This, however, is an artifact of the index construction, since there are common items in the two indexes. The reason for the commonality is that, in many cases, the experience of women in non-sex stereotyped roles is <u>also</u> the experience of women in positions of leadership.

In addition, we obtained selected demographic, achievement, school attitude occupational and educational aspiration and cognitive style information regarding each child. These variables are defined in Table 1, where summary statistics are reported. Table 2 reports summary statistics on the indexes.

RESULTS

In examining the results from the survey, we have used a simple least-squares regression to estimate the effects of the independent variables on the dependent ones. In each analysis, we have separated the analyses by sex of child. Several equations have been estimated in each analysis.

The effects of student experience on student attitudes

To examine the effects of student experience on student attitude change, we estimated the following equations:

1. Leadership

$$L_2=B_0+B_1L_1+B_2LE_2$$

$$L_2=B_0+B_1L_1+B_2LE_2+B_3CE_2$$

$$L_2=B_0+B_1L_1+B_2LE_2+B_3CE_2+\sum_{i=4}^{n}B_iX_i$$

2. Cross-sex interaction

$$C_2=B_0+B_1C_1+B_2CE_2$$

$$C_2=B_0+B_1C_1+B_2CE_2+B_3NE_2$$

$$C_2=B_0+B_1C_1+B_2CE_2+B_3LE_2$$

$$C_2=B_0+B_1C_1+B_2CE_2+B_3NE_2+\sum_{i=4}^{n}B_iX_i$$

$$C_3=B_0+B_1C_1+B_2CE_2+B_3LE_2+\sum_{i=4}^{n}B_iX_i$$

3. Non-sex-role stereotyping

$$N_2=B_0+B_1N_1+B_2NE_2$$

$$N_2=B_0+B_1N_1+B_2NE_2+B_3CE_2$$

$$N_2=B_0+B_1N_1+B_2NE_2+B_3CE_2+\sum_{i=4}^{n}B_iX_i$$

Where L_1 = attitudes toward leadership, fall survey

L_2 = attitudes toward leadership, spring survey

C_1 = attitudes toward cross-sex interaction, fall survey

C_2 = attitudes toward cross-sex interaction, spring survey

N_1 = attitudes toward non-sex-stereotyping, fall survey

N_2 = attitudes toward non-sex-stereotyping, spring survey

LE_2 = experience of female leadership, spring survey

CE_2 = experience of cross-sex interaction, spring survey

NE_2 = experience of non-sex-stereotyping, spring survey

ΣX_i = a set of demographic, achievement aptitude and attitude variables defined in Table 1.

From Table 3 it is evident that we were unable to identify determinants of attitudes toward leadership. The few significant correlations are anomalous, as there is a negative relationship between both fall and spring measures, and between exposure to female leaders and attitudes toward leadership.

There were, however, strong relationships between change in attitude toward cross-sex interaction and experience with cross-sex interaction for both girls and boys. For boys, there was also a positive relationship between exposure to a female leader and a positive attitude change regarding cross-sex interaction. For boys, exposure to non-sex-stereotyping was also positively related to a positive change regarding attitudes toward cross-sex interaction. Younger children were more stereotyped, and, for boys, coming from a large family was related to less stereotyped attitudes regarding cross-sex interaction. Girls with more varied occupational aspirations and with a more positive attitude toward reading were more likely to have changed their attitudes regarding cross-sex interaction in a non-sex-stereotyped direction.

Both boys and girls who had experienced more cross-sex interaction were less

likely to hold stereotyped attitudes regarding sex roles in general. While exposure to non-sex stereotyped models was an important determinant of male attitude change, this was not the case for females. For girls, attitude change was affected by cognitive style and measured achievement, while boys from single parent families and having positive attitudes toward math were more stereotyped in their atittudes.

Experimental treatment effects on experience variables.

Since we had evidence to support the hypothesized relationships between the experience variables and the attitude change variables, we wanted to test directly the effects of the experiment on the experience variables--as seen through the childrens' perceptions.

In Table 4, we report the results of these estimations, which in all cases include equations of the following form:

$$E_2 = B_0 + B_1 E_1 + B_2 X$$

$$E_2 = B_0 + B_1 E_1 + B_2 X + \sum_{i=3}^{n} B_i Z_i$$

Where E_2 = spring experience variable

E_1 = fall experience variable

X = experimental treatment

Z_i = demographic variables etc.

Table 4 shows quite clearly that the experimental treatment was effective vis-a-vis the girls' perceptions of both cross-sex interaction experiences and non-sex stereotyped experiences. In both cases, girls in the experimental group reported less stereotyped spring experiences controlling for fall experiences. This did not obtain for either boys or for female leadership experiences.

Experimental treatment determinants of attitude change.

Our final question was: Was the teacher consciousness-raising activity sufficient to produce changes in children's attitudes? Equations similar to those in the

previous section were estimated, substituting attitudes in fall and spring for experience in fall and spring. From Table 5, it is clear that the experimental treatment did not change children's attitudes. This is not surprising, however, as the intervention was not actually intended to have this effect.

CONCLUSION

From this study there are several conclusions to be drawn.

First, and most significantly, we have provided evidence that children's experiences of cross-sex interaction and non-sex-role stereotyping are important determinants of changes in their attitudes about these issues. That is, we found that children whose school experience included having a man as a teacher, having a woman as a unit leader, having a woman as a principal, knowing women who supervise men and knowing women doctors--these children were more likely to hold more egalitarian beliefs about sex differences, intelligence, job discrimination, working women, and domestic roles and to have positive attitudes about cross-sex friendship and work choices. Similarly, we found that children whose teachers did not group by sex, whose teachers assigned them school work in mixed-sex groups, who played sports and engaged in clubs in sex-integrated groups, and whose parents were supportive of cross-sex friendships--these children were more likely to have cross-sex friendship choices, cross-sex work partner choices, and to approve of cross-sex interaction in general, as well as to hold less stereotyped attitudes regarding men's and women's roles in work and society.

Second, we have shown that a teacher consciousness raising workshop can have effects on childrens' perceptions of their environment, making them more aware of cross-sex interaction in class, sports, school work, and clubs and making them more aware of women principals, men teachers and women in non-traditional roles.

Third, we have suggestive evidence that childrens' attitudes are not changed directly through teacher's awareness of sexism, but are changed through behavioral experiences which are in the power of the teacher to control, such as cross-sex grouping and providing non-sex stereotyped experiences in school.

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APPENDIX A

Scale 1: Independent Non-sex Stereotyping (INDNS)

STU 17-ITEM 10: Have you ever had a man as your regular teacher?

STU 18-ITEM 11: Have you ever been in a unit that had a woman as a unit leader?

STU 19-ITEM 12: Have you ever been in a school that had a woman principal?

STU 44-ITEM 35: Is there any man you can think of who has a woman for a boss (or supervisor)?

STU 45-ITEM 36: Do you know any women doctors?

Scale 2: Independent Cross-sex Interaction (INDCSI)

STU 20-ITEM 14: This year, does your teacher ever divide the class into a boys group and a girls group to be excused or to go places or do things?

STU 21-ITEM 51: Do you play sports with both girls and boys? (Do you play any sports with both girls and boys?)

STU 22-ITEM 16: Does your teacher ever have you work on school work with a girl/boy?

STU 34-ITEM 26: Do you belong to any clubs that have both girls and boys as members?

STU 49-ITEM 41: This year have you ever invited a girl/boy over to your house to play?

ITEM 46: Who do your parents want you to have as friends?

Scale 3: Independent Female Leadership (INDFL)

STU 18-ITEM 11: Have you ever been in a unit that had a woman as a unit leader?

STU 19-ITEM 12: Have you ever been in a school that had a woman principal?

STU 31-ITEM 23: This year in school, have you studies about any famous women?

STU 43-ITEM 34: Have you ever been in a group of girls and boys (a team or a club) where a girl was chosen as leader or captain?

STU 44-ITEM 35: Is there any man you can think of who has a woman for a boss (or supervisor)?

STU 27-ITEM 21: Which of the following TV programs have you watched? Mark an X by all you have watched. (Which of the following TV programs have you watched more than once? Mark an X by all you have watched more than once.)

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Scale 4: Dependent Non-sex Stereotyping (DEPNS)

STU 23-ITEM 17: Are girls and boys more alike than different, or are girls and boys more different than alike?

STU 38-ITEM 30: Do you think that women are usually smarter than men, that men are usually smarter than women, or that being smart doesn't have anything to do with being a woman or a man?

STU 57-ITEM 48: In general, would you say that an employer or a company can choose to hire only men for certain kinds of jobs?

STU 58-ITEM 49: If a woman wants to have a career or a full-time job, should she get married?

STU 59-ITEM 50: Some people say that women and men should be paid exactly the same for doing the same job for the same amount of time. Other people say that men ought to get paid more for their work because they have families to support. Which do you say?

STU 60-ITEM 51: Whenever possible, should husbands and wives both work part-time and both take care of children part-time? (Should husbands and wives <u>both</u> work part-time and <u>both</u> take care of children part-time?)

STU 71-ITEM 61: Intelligent people are people who have good ideas and solve problems. Who do you think are intelligent?

Scale 5: Dependent Cross-sex Interaction (DEPCSI)

STU 16-ITEM 9: Think of your three best friends in this school. Are all your friends girls/boys like you, or is one or more a boy/girl?

STU 48-ITEM 40: Think of three people in your class that you would like to work with on a project. Are they, all boys, all girls, both boys and girls?

STU 50-ITEM 42: Read this story and then answer the question.

John is looking for a job. There is a large airport in his town and there are jobs open as flight attendants and as ground crew. The

APPENDIX A (Page 3)

flight attendants make a little more money than the ground crew makes. Most of the flight attendants are women and most of the ground crew are men. John can do both jobs. He has been offered both jobs, and is trying to decide which job to take. Which job should John take?

STU 53-ITEM 45: Do you think boys and girls should play sports like baseball and soccer together?

Scale 6: Dependent Female Leadership (DEPFL)

STU 37-ITEM 29: Would you feel comfortable being a class president?

STU 42-ITEM 33: How good a leader do you think you are or do you think you would be?

STU 62-ITEM 53: Are you a leader?

BOSS-BOSS 2: Like to be the boss--doesn't like to be the boss.

Table A Correlations Between Student Experience and Attitudes [3]

	Fall Correlations [1]						Spring Correlations [2]					
	INDNS	INDCSI	INDFL	DEPNS	DEPCSI	DEPFL	INDNS	INDCSI	INDFL	DEPNS	DEPCSI	DEPFL
INDNS		.175	.597	-.035	.032	.107		.107	.617	-.008	.096	-.034
		.141	.698	.090	.063	.132		.223	.656	.032	.162	-.141
INDCSI	.198		.129	.048	.355	.160	.139		.070	.233	.442	-.194
	.091		.117	.124	.281	.177	.090		.174	.161	.381	.062
INDFL	.574	.303		-.061	-.004	.044	.568	.272		-.031	.089	-.149
	.568	.170		.147	.078	.040	.646	.240		.063	.084	-.164
DEPNS	.050	.196	.174		.080	-.031	.043	.218	.114		.177	-.159
	.010	.302	.025		.184	.140	.225	.361	.313		.218	.001
DEPCSI	.149	.384	.274	.320		.139	.189	.470	.328	.372		-.105
	.095	.419	.114	.384		.322	.083	.553	.198	.359		-.074
DEPFL	.051	-.064	.028	-.190	.031		-.107	-.021	-.008	.019	-.015	
	-.004	.046	.072	-.097	-.057		-.181	-.201	-.184	-.194	-.220	

Girls above diagonal

Boys below diagonal

4th grade above 5th grade

1. All children surveyed in fall (12/27/77 run)
2. Children surveyed in fall and spring (1/3/78 run)
3. $N \geq 200$; $p \geq .05$ if $r \geq \pm .15$

Table 1: Demographic and Academic Information by Sex, Grade and Experimental Condition

Background Information		4th Grade				5th Grade			
		Experimental		Control		Experimental		Control	
		Male	Female	Male	Female	Male	Female	Male	Female
Number of siblings		(N=99)	(N=92)	(N=94)	(N=81)	(N=73)	(N=79)	(N=76)	(N=94)
	$\bar{X}$	1.87	2.03	2.06	1.89	1.73	2.25	2.22	2.33
	(SD)	(1.65)	(1.65)	(2.06)	(1.79)	(1.29)	(2.03)	(2.11)	(1.95)
Who do you live with most of the time?	%	(N=99)	(N=91)	(N=92)	(N=82)	(N=71)	(N=79)	(N=77)	(N=94)
Both parents	%	66.7	81.3	68.5	76.8	69.0	75.9	74.0	78.7
Mother only	%	25.3	16.5	29.3	22.0	22.5	17.7	19.5	16.0
Father only	%	1.0	1.1	2.2	1.2	1.4	2.5	2.6	1.1
Other	%	7.1	1.1	0.0	0.0	7.0	3.8	3.9	4.3
Mother finish college?	%	(N=100)	(N=91)	(N=91)	(N=82)	(N=73)	(N=79)	(N=77)	(N=94)
Yes	%	53.0	37.4	57.1	51.2	46.6	24.1	41.6	43.6
No	%	16.0	24.2	17.6	23.2	20.5	39.2	24.7	28.7
Don't know	%	31.0	38.5	25.3	25.6	32.9	36.7	33.8	27.7

- continued next page

Table 1: (continued)

		4th Grade				5th Grade			
		Experimental		Control		Experimental		Control	
		Male	Female	Male	Female	Male	Female	Male	Female
Mother have job?		(N=100)	(N=91)	(N=90)	(N=82)	(N=72)	(N=78)	(N=77)	(N=93)
Yes-full time	%	29.0	28.6	26.7	28.0	33.3	29.5	28.6	28.0
Yes-part-time	%	29.0	35.2	26.7	30.5	26.4	30.8	29.9	30.1
No	%	42.0	36.3	46.7	41.5	40.3	39.7	41.6	41.9
Father finish college?	%	(N=100)	(N=91)	(N=90)	(N=81)	(N=73)	(N=79)	(N=77)	(N=94)
Yes	%	54.0	46.2	67.8	58.0	58.9	45.6	51.9	50.0
No	%	14.0	11.0	8.9	6.2	12.3	17.7	14.3	20.2
Don't know	%	32.0	42.9	23.3	35.8	28.8	36.7	33.8	29.8
Father have a job?	%	(N=99)	(N=91)	(N=90)	(N=80)	(N=73)	(N=79)	(N=77)	(N=93)
Yes-full time	%	89.9	91.2	84.4	91.3	87.7	91.1	80.5	91.4
Yes-part-time	%	6.1	3.3	12.2	6.3	11.0	7.6	13.0	5.4
No	%	4.0	5.5	3.3	2.5	1.4	1.3	6.5	3.2

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Table 1: (continued)

Academic Information		4th Grade				5th Grade			
		Experimental		Control		Experimental		Control	
		Male	Female	Male	Female	Male	Female	Male	Female
		(N=99)	(N-92)	(N=94)	(N=81)	(N=73)	(N=79)	(N=76)	(N=95)
Iowa Test of Basic Skills									
Total Reading	$\bar{X}$	47.05	61.12	44.93	52.94	44.64	51.85	39.34	51.21
	(SD)	(33.34)	(29.97)	(34.61)	(34.95)	(35.61)	(29.52)	(32.77)	(32.17)
Total Math	$\bar{X}$	51.21	60.07	48.77	48.62	45.05	53.58	40.78	50.48
	(SD)	(31.74)	(29.47)	(33.72)	(31.01)	(35.69)	(30.03)	(33.14)	(31.62)
TOTAL	$\bar{X}$	57.77	67.02	58.72	61.04	54.74	61.11	55.22	60.97
	(SD)	(22.67)	(20.80)	(22.15)	(23.09)	(25.50)	(19.78)	(20.26)	(22.60)
Cognitive Style (GEFT-C)	$\bar{X}$	10.36	11.62	9.28	8.98	13.09	13.95	10.61	12.61
	(SD)	(6.80)	(7.65)	(6.85)	(6.20)	(7.57)	(6.80)	(6.51)	(7.03)
Attitude Toward Reading	$\bar{X}$	23.05	24.42	23.50	24.04	23.78	23.82	23.66	24.12
	(SD)	(2.77)	(2.71)	(4.43)	(2.82)	(3.35)	(3.38)	(2.54)	(2.85)
Attitude Toward Math	$\bar{X}$	23.59	23.21	23.66	22.72	23.84	23.94	23.30	22.91
	(SD)	(2.96)	(3.06)	(2.84)	(4.25)	(2.97)	(3.11)	(3.61)	(3.35)

Table 2: Means and Standard Deviations of Index Scores, by Sex of Student and Survey Administration

Independent & Dependent Indexes		Males (339)		Females (342)	
		Fall	Spring	Fall	Spring
INDNS	M=	7.46	7.58	7.23	7.43
	S.D.=	(1.21)	(1.02)	(1.16)	(1.04)
INDCSI	M=	7.35	8.26	7.04	8.01
	S.D.=	(1.20)	(1.40)	(1.14)	(1.18)
INDFL	M=	9.27	9.23	8.89	8.99
	S.D.=	(1.20)	(1.17)	(1.11)	(1.15)
DEPNS	M=	10.22	9.71	9.40	9.06
	S.D.=	(1.70)	(1.54)	(1.30)	(1.24)
DEPCSI	M=	6.27	5.89	5.82	5.64
	S.D.=	(1.17)	(1.24)	(1.04)	(1.02)
DEPFL	M=	6.33	10.15	6.89	10.43
	S.D.=	(1.10)	(1.99)	(1.16)	(1.93)

TABLE 3

Estimates of the Determinants of Non-Sex Stereotyping, Cross-Sex Interaction, and Leadership Attitudes as a Function of Fall Attitudes, Non-Sex Stereotyping, Cross-Sex Interaction, and Female Leadership Conditions, and Selected Background and School Characteristics

INDEPENDENT PREDICTORS	DEPENDENT VARIABLES - SPRING																	
	Leadership						Cross-Sex Interaction								Non-Sex Stereotyping			
	Males (n=339)			Females (n=342)			Males (n=339)			Females (n=342)			Males (n=339)			Females (n=342)		
Dependent (Fall)	-.107 (3.953)	-.110 (4.197)	-.096 (2.861)	.051 (.901)	.053 (.968)	.019 (.121)	.320 (44.569)	.312 (43.022)	.296 (37.440)	.221 (19.692)	.218 (19.060)	.216 (18.919)	.320 (44.569)	.295 (38.110)	.277 (32.549)	.221 (19.692)	.220 (19.473)	.217 (19.018)	.390 (61.111)	.354 (49.432)	.330 (38.760)	.240 (20.708)	.232 (19.675)	.197 (13.839)
Non-Sex Stereotyping (Spring)								.130 (8.424)	.124 (7.268)		.068 (1.689)	.042 (.392)							.103 (4.229)	.072 (2.091)	.078 (2.286)	.055 (1.070)	.019 (.122)	-.016 (.084)
Cross-Sex Interacting (Spring)		-.066 (1.378)	-.041 (.484)		.058 (1.120)	-.015 (.071)	.377 (61.709)	.356 (54.917)	.379 (58.999)	.337 (51.089)	.342 (45.019)	.313 (35.191)	.377 (61.709)	.335 (47.385)	.357 (51.548)	.337 (51.089)	.350 (47.972)	.313 (35.628)		.169 (10.959)	.185 (12.133)		.157 (8.638)	.134 (5.733)
Female Leadership (Spring)	-.136 (6.399)	-.113 (4.119)	-.112 (3.761)	-.115 (4.520)	-.105 (3.693)	-.112 (4.083)								.164 (12.308)	.166 (12.419)		.041 (.724)	.029 (.357)						
Grade - Dummy (4th=1)			-.082 (.890)			-.033 (.867)			.070 (2.336)			.121 (5.742)			.080 (3.137)			.125 (8.362)			.054 (1.131)			.070 (1.626)
Family - Dummy (Single Parent=1)			.073 (1.738)			-.117 (4.482)			.018 (.153)			.043 (.744)			.073 (.262)			.041 (.488)			.076 (2.260)			-.018 (.113)
Father Employment			.017 (.095)			-.110 (3.820)			.013 (.110)			.035 (.011)			.009 (.033)			.007 (.021)			-.007 (.028)			-.016 (.069)
Father Education - Dummy (College=1)			.019 (.075)			-.036 (.325)			-.030 (.278)			-.001 (.000)			-.030 (.279)			-.004 (.005)			-.014 (.047)			-.023 (.135)
Mother Education - Dummy (College=1)			.004 (.003)			.009 (.019)			.043 (.555)			-.044 (.620)			.034 (.374)			-.040 (.506)			-.015 (.052)			-.027 (.204)
No. of Siblings			-.056 (.988)			-.046 (.693)			-.112 (5.799)			.047 (.922)			-.109 (5.619)			.047 (.921)			-.066 (1.613)			-.007 (.018)
ITBS (Tile)			.048 (.591)			.070 (1.177)			.037 (.528)			-.071 (1.526)			.044 (.768)			-.072 (1.576)			-.057 (1.009)			-.087 (1.930)
GEFT			.018 (.090)			-.012 (.035)			-.037 (.585)			.011 (.037)			-.043 (.787)			.010 (.030)			-.065 (1.397)			-.145 (5.589)
Jobs Listed (F)			.024 (.175)			.043 (.589)			-.057 (1.576)			-.069 (1.373)			-.050 (1.233)			-.067 (1.869)			-.053 (1.047)			-.028 (.237)
Attitudes Toward Math			.138 (5.174)			-.046 (.704)			.008 (.028)			-.039 (.645)			.005 (.011)			-.040 (.686)			.068 (1.799)			-.023 (.224)
Attitudes Toward Reading			-.020 (.129)			.092 (2.571)			-.049 (1.129)			-.111 (4.787)			-.061 (1.763)			-.111 (4.773)			.013 (.062)			.026 (.222)
R^2	.033	.037	.069	.015	.018	.073	.334	.350	.376	.219	.226	.272	.334	.337	.385	.219	.221	.272	.163	.192	.220	.062	.064	.139
degrees of freedom	2/336	3/335	14/324	2/339	3/338	14/327	2/336	3/335	14/324	2/339	3/338	14/327	2/336	3/335	14/324	2/339	3/338	14/327	2/336	3/335	14/324	2/339	3/338	14/327

Notes: (a) F-statistics shown in parentheses below corresponding standardized regression coefficients.
(b) $F(2,336 \text{ or } 339) = 3.03$, $p < .05$ $F(2,336 \text{ or } 339) = 4.68$, $p < .01$
$F(3,335 \text{ or } 338) = 2.63$, $p < .05$ $F(3,335 \text{ or } 338) = 3.85$, $p < .01$
$F(14,324 \text{ or } 327) = 1.73$, $p < .05$ $F(14,324 \text{ or } 327) = 2.14$, $p < .01$

Table 4

Estimates of the Determinants of Non-Sex Stereotyping, Cross-Sex Interaction and Female Leadership Conditions in the Spring as a Function of Fall Conditions, Experimental Condition, and Selected Background and School Characteristics

INDEPENDENT PREDICTORS	INDEPENDENT VARIABLES - SPRING											
	Female Leadership				Cross-Sex Interaction				Non-Sex Stereotyping			
	Males (n=339)		Females (n=342)		Males (n=339)		Females (n=342)		Males (n=339)		Females (n=342)	
Independent (Fall)	.393 (59.522)	.391 (55.696)	.380 (56.619)	.394 (58.328)	.361 (49.481)	.365 (50.748)	.355 (47.880)	.337 (42.845)	.351 (45.749)	.355 (45.060)	.473 (98.631)	.441 (78.595)
Experimental Condition	.045 (.772)	.041 (.625)	.020 (.150)	.003 (.004)	-.022 (.181)	-.010 (.040)	-.114 (4.983)	-.085 (2.728)	.020 (.150)	-.001 (.000)	-.119 (6.278)	-.120 (6.095)
Grade - Dummy (4th=1)		-.021 (.155)		-.047 (.807)		.012 (.057)		-.113 (4.902)		.035 (.436)		.097 (3.688)
Family - Dummy (Single Parent=1)		-.055 (1.132)		-.032 (.391)		-.001 (.001)		-.008 (.023)		-.048 (.848)		-.110 (5.086)
Father Employment		.026 (.259)		-.019 (.130)		.067 (1.669)		.065 (1.647)		-.036 (.475)		.044 (.803)
Father Education - Dummy (College=1)		.041 (.392)		.112 (3.495)		.012 (.033)		-.065 (1.263)		-.046 (.500)		.013 (.050)
Mother Education - Dummy (College=1)		-.054 (.685)		-.175 (8.786)		.045 (.487)		.079 (1.937)		-.064 (.944)		-.051 (.906)
No. of Siblings		-.011 (.042)		.006 (.014)		.148 (8.094)		.053 (1.159)		-.075 (2.039)		.019 (.156)
ITBS (%ile)		-.012 (.040)		-.032 (.283)		-.060 (1.086)		-.025 (.183)		.009 (.025)		-.088 (2.399)
CEFT		.068 (1.502)		.074 (1.535)		.079 (2.034)		-.083 (2.060)		.069 (1.539)		.024 (.190)
Jobs Listed (#)		.006 (.013)		-.061 (1.447)		-.099 (3.649)		-.107 (4.476)		.049 (.876)		-.037 (.593)
Attitudes Toward Math		-.054 (1.097)		-.049 (.918)		-.096 (3.491)		-.007 (.022)		-.100 (3.709)		-.081 (2.737)
Attitudes Toward Reading		.018 (.119)		-.074 (1.968)		-.002 (.002)		-.142 (7.633)		-.024 (.196)		-.072 (2.098)
R^2	.163	.179	.147	.191	.134	.190	.158	.239	.126	.168	.233	.276
degrees of freedom	2/336	13/325	2/339	13/328	2/336	13/325	2/339	13/328	2/336	13/325	2/339	13/328

Notes: (a) F-statistics shown in parentheses below corresponding standardized regression coefficients.
(b) $F(2,336 \text{ or } 339) = 3.03$, $p < .05$ $F(2,336 \text{ or } 339) = 4.68$, $p < .01$
$F(13,325 \text{ or } 328) = 1.76$, $p < .05$ $F(13,325 \text{ or } 328) = 2.20$, $p < .01$

Table 5

Estimates of the Determinants of Non-Sex Stereotyping, Cross-Sex Interaction and Leadership Attitudes in the Spring as a Function of Fall Attitudes and Experiemental Condition

INDEPENDENT PREDICTORS	DEPENDENT VARIABLES - SPRING											
	Leadership				Cross-Sex Interaction				Non-Sex Stereotyping			
	Males (n=339)		Females (n=342)		Males (n=339)		Females (n=342)		Males (n=339)		Females (n=342)	
Dependent (Fall)	-.118 (4.650)	-.100 (3.122)	.047 (.736)	.017 (.087)	.460 (90.273)	.450 (81.738)	.320 (37.716)	.295) (33.091)	.398 (62.794)	.381 (51.847)	.239 (20.487)	.201 (14.153)
Experimental Condition	.007 (.016)	.007 (.017)	.024 (.201)	.023 (.168)	-.039 (.657)	-.048 (.936)	.007 (.020)	.014 (.068)	.059 (1.403)	.060 (1.349)	-.055 (1.071)	-.038 (.505)
Grade - Dummy (4th=1)		-.053 (.899)		-.051 (.822)		.069 (1.872)		.092 (3.037)		.061 (1.382)		.058 (1.143)
Family - Dummy (Single Parent=1)		.082 (2.162)		-.115 (4.292)		.016 (.099)		.035 (.460)		.071 (1.858)		-.022 (.161)
Father Employment		.014 (.060)		-.105 (3.522)		.020 (.161)		.034 (.427)		.001 (.000)		-.003 (.003)
Father Education - Dummy (College=1)		.015 (.046)		-.040 (.389)		-.017 (.077)		-.022 (.142)		.004 (.004)		-.029 (.217)
Mother Education - Dummy (College=1)		.008 (.014)		.028 (.192)		.028 (.197)		-.010 (.026)		-.026 (.165)		-.019 (.100)
No. of Siblings		.058 (1.058)		-.051 (.857)		-.068 (1.792)		.057 (1.223)		-.034 (.427)		-.003 (.003)
ITBS (%ile)		.059 (.901)		.072 (1.216)		.020 (.131)		-.077 (1.640)		-.054 (.845)		-.086 (1.861)
GEFT		.005 (.007)		-.019 (.089)		.015 (.077)		-.022 (.132)		-.048 (.723)		-.153 (6.149)
Jobs Listed (#)		.031 (.302)		.052 (.896)		-.080 (2.516)		-.116 (5.104)		-.072 (1.876)		-.047 (.783)
Attitudes Toward Math		.138 (6.055)		-.038 (.471)		-.033 (.431)		-.051 (.987)		.042 (.646)		-.025 (.218)
Attitudes Toward Reading		-.025 (.193)		.103 (3.275)		-.055 (1.142)		-.155 (8.484)		.010 (.038)		-.047 (.726)
R^2	.014	.052	.003	.061	.213	.233	.102	.188	.158	.182	.062	.125
degrees of freedom	2/336	13/325	2/339	13/328	2/336	13/325	2/339	13/328	2/336	13/325	2/339	13/328

Notes: (a) F-statistics shown in parentheses below corresponding standardized regression coefficients.
(b) $F(2,336 \text{ or } 339) = 3.03$, $p < .05$ $F(2,336 \text{ or } 339) = 4.68$, $p < .01$
$F(13,325 \text{ or } 328) = 1.76$, $p < .05$ $F(13,325 \text{ or } 328) = 2.20$, $p < .01$